

# REGENERON®

## Teen Scientists Win \$1.8 Million at Virtual Regeneron Science Talent Search 2021 for Remarkable Research on Infinite Matching Algorithms, Machine Learning to Evaluate New Medicines and Water Filtration

March 17, 2021 at 8:57 PM EDT

TARRYTOWN, N.Y. and WASHINGTON, March 17, 2021 /PRNewswire/ --

*\$250,000 top award goes to Yunseo Choi in nation's oldest and most prestigious STEM competition for high school seniors*

[Regeneron Pharmaceuticals, Inc.](#) (NASDAQ: REGN) and [Society for Science](#) (the Society) announced that Yunseo Choi, 18, of Exeter, New Hampshire, won the **\$250,000 top award** in the 2021 [Regeneron Science Talent Search](#), the nation's oldest and most prestigious science and math competition for high school seniors. Historically held in person in Washington, D.C., this is the second year in its 80-year history that the competition took place virtually to keep the finalists and their families safe during the ongoing pandemic. Forty finalists, including Yunseo, were honored tonight during a virtual winners' award ceremony. More than \$1.8 million was awarded to the finalists, who were evaluated based on their projects' scientific rigor, their exceptional problem-solving abilities and their potential to become scientific leaders.

**Yunseo Choi** won first place and **\$250,000** for her project where she played theoretical "match maker" for an infinite number of things or people. She studied matching algorithms that work for a finite number of couples and determined which important properties would still work for an infinite number of pairs. Matching theory has numerous real-life applications, including matching organ donors to recipients, assigning medical school applicants to rotations and pairing potential couples in dating apps.

Second place and **\$175,000** went to **Noah Getz**, 17, of **New York, New York**, for his research where he adjusted the way computer models identify promising pharmaceutical compounds, which could make the discovery of new drugs faster and less expensive. Noah's method treats classification as an information retrieval task, similar to the ranking results from a browser search. When he tested his model, it identified two drugs that might dramatically reduce the levels of an inflammation marker implicated in both Alzheimer's disease and COVID-19.

Third place and **\$150,000** went to **Eshani Jha**, 17, of **San Jose, California**, for her development of a biochar filtration system that removes microplastics, pharmaceuticals, pesticides and heavy metals (such as arsenic, cadmium, lead and mercury) from drinking water. Biochar has properties similar to charcoal but is much more sustainable and affordable because it can be made from biowastes. Eshani found that its effectiveness could be enhanced by increasing its surface area and carbon content and by adding certain chemical modifications to improve its ability to sequester contaminants. She estimates her filter would cost under a dollar per month.

"Congratulations to the Regeneron Science Talent Search 2021 winners," said Maya Ajmera, President and CEO of Society for Science, Publisher of *Science News* and 1985 Science Talent Search alumna. "Throughout the COVID-19 pandemic, students like Yunseo have shown incredible resilience and perseverance in the face of new obstacles, conducting rigorous research, while navigating an uncertain world. These young people are the stewards of our future and I could not be more inspired by their hard work and pure grit."

The Regeneron Science Talent Search provides a national stage for future leaders in STEM – bringing together the best and brightest young minds to present their original research ideas to leading scientists. The competition celebrates the hard work, innovative thinking, leadership qualities and creativity of students who are bringing a fresh perspective to solving significant global challenges through rigorous research and cutting-edge discoveries. The judging panel also considers how these research efforts, innovative thinking and leadership qualities demonstrate the students' potential to become future leaders in critical STEM fields.

"Congratulations to this year's winners of the Regeneron Science Talent Search. Your curiosity and passion for science – as well as your unique genius for it – has now been validated," said George D. Yancopoulos, M.D., Ph.D., Co-Founder, President and Chief Scientific Officer of Regeneron, who credits his experiences as a winner of the 1976 Science Talent Search for propelling him on a path that led his team to invent several of the world's most important medicines, including treatments for blindness, allergic diseases, Ebola and COVID-19. "I hope you now take on the responsibility of using your powers and ingenuity to help address some of the truly existential challenges facing humanity, from disease to climate change."

Other top honors from the competition include:

**Fourth Place:** Gopal Goel, 17, of Portland, Oregon received a \$100,000 award for math research that made connections between two subjects regarding randomness and probability. Prior work by others had shown that a connection existed, but Gopal indicated that this connection is much more general in nature. He believes his work can be useful to researchers in the fields of nuclear

physics, quantum field theory and meteorology, and hopes it will aid in the search for the true nature of quantum gravity, more commonly known as "the theory of everything."

**Fifth Place:** Timothy Qian, 18, of Rockville, Maryland received a \$90,000 award for a study of quantum metrology, which uses quantum entanglement to get more accurate measurements. Tim developed an innovative protocol that could one day be used with quantum sensor networks to improve hardware controlling quantum computers and improve nanoscale nuclear magnetic resonance imaging.

**Sixth Place:** Vetri Vel, 16, of Veazie, Maine received a \$80,000 award for his project engineering a deep learning system that combines a small computer and a thermal camera to detect heat signatures of a fallen person and immediately text for help. His hands-free detection system was able to distinguish among competing images to identify a fallen person at an average accuracy of 98 percent. He started his project after a neighbor collapsed alone at home. Falls are a leading cause of fatal injury among older adults.

**Seventh Place:** Alay Shah, 17, of Plano, Texas received a \$70,000 award for the development of a diagnostic tool that tracks eye movement to identify neurological disorders that he hopes can become a low-cost alternative to MRIs. Alay's tool tracks pupil movement and gaze with an infrared camera and uses software he wrote. The data is then analyzed using deep learning algorithms to identify abnormal eye reflexes. In clinical tests of patients with Parkinson's, dementia, multiple sclerosis and ADHD, Alay found unique eye patterns associated with each condition.

**Eighth Place:** Wenjun Hou, 18, of Portland, Oregon received a \$60,000 award for using quantum computing to solve the well-known computer science question called the "knapsack problem." He not only wrote a new quantum algorithm, but also designed quantum hardware to implement the central component of his algorithm. This is believed to be the first time this has ever been done.

**Ninth Place:** Vivian Yee, 17, of Beverly Hills, Michigan received a \$50,000 award for research on inequalities in COVID-19 incidence and outcomes in the counties of New York City. By modelling rates of transmission, recovery and death alongside housing, education and employment status, she found higher rates of transmission and death in more socially vulnerable communities. Her findings, which are included in a Consensus Memorandum accepted by the Congressional Coronavirus Task Force, may help guide future policies and initiatives for public health.

**Tenth Place:** Sam Christian, 17, of Austin, Texas received a \$40,000 award for research looking at computationally modeled data from numerous observatories and NASA's TESS telescope to identify and observe movements of planets in 69 wide-binary star systems, which are twin-star systems spaced up to a light year apart. He showed that the orbits of these exoplanets align to a great extent with the orbit of their binary system. His findings, when applied to a larger sample, could shed additional light on how planets are formed and evolve.

Dasia Taylor, 17, of North Liberty, Iowa, was named the Seaborg Award winner and given the opportunity to speak on behalf of the Regeneron Science Talent Search Class of 2021. The 40 finalists chose Dasia as the student who most exemplifies their class and the extraordinary attributes of nuclear chemist Glenn T. Seaborg, who won the Nobel Prize for Chemistry in 1951 and served on the Society's Board of Trustees for 30 years.

Each finalist not in the top 10 received \$25,000. These students will join the ranks of other Science Talent Search alumni, many of whom have gone on to have world-changing careers in STEM fields, and some of whom have earned the most esteemed honors in science and math, including the Nobel Prize, National Medal of Science and MacArthur Foundation Fellowships. In total, Regeneron awarded \$3.1 million in prizes through the Regeneron Science Talent Search 2021, including \$2,000 to each of the top scholars and their schools.

### **About the Regeneron Science Talent Search**

The Regeneron Science Talent Search, a program of Society for Science since 1942, is the nation's oldest and most prestigious science and math competition for high school seniors. Each year, around 2,000 student entrants submit original research in critically important scientific fields of study and are judged by leading experts in their fields. Unique among high school competitions in the U.S. and around the world, the Regeneron Science Talent Search focuses on identifying, inspiring and engaging the nation's most promising young scientists who are creating the ideas that could solve society's most urgent challenges.

In 2017, [Regeneron](#) became only the third sponsor of the Science Talent Search, increasing the overall awards distribution to better reward the best and brightest young minds. Through its 10-year, \$100 million commitment, which also supports a range of outreach and equity programs, Regeneron nearly doubled the overall award distribution to \$3.1 million annually, increasing the top award to \$250,000 and doubling the awards for the top 300 scholars and their schools to \$2,000 each to inspire more young people to engage in science.

Program alumni include recipients of the world's most coveted science and math honors, including 13 Nobel Prizes, 13 National Medals of Science, six Breakthrough Prizes, 22 MacArthur Foundation Fellowships and two Fields Medals.

Learn more at <https://www.societyforscience.org/regeneron-sts/>.

### **About Society for Science**

Society for Science is dedicated to the achievement of young scientists in independent research and to public engagement in science. Established in 1921, the Society is a nonprofit whose vision is to promote the understanding and appreciation of science and the vital role it plays in human advancement. Through its world-class competitions, including the Regeneron Science Talent Search, the Regeneron International Science and Engineering Fair, the Broadcom MASTERS, and its award-winning magazine, *Science News* and *Science News for Students*, Society for Science is committed to inform, educate, and inspire. Learn more at [www.societyforscience.org](http://www.societyforscience.org) and follow us on [Facebook](#), [Twitter](#), [Instagram](#) and Snapchat (Society4Science).

### **About Regeneron**

Regeneron (NASDAQ: REGN) is a leading biotechnology company that invents life-transforming medicines for people with serious diseases. Founded and led for over 30 years by physician-scientists, our unique ability to repeatedly and consistently translate science into medicine has led to nine FDA-approved treatments and numerous product candidates in development, almost all of which were homegrown in our laboratories. Our medicines and pipeline are designed to help patients with eye diseases, allergic and inflammatory diseases, cancer, cardiovascular and metabolic diseases, pain, infectious diseases and rare diseases.

Regeneron believes that operating as a good corporate citizen is crucial to delivering on our mission. We approach corporate responsibility with three goals in mind: to improve the lives of people with serious diseases, to foster a culture of integrity and excellence and to build sustainable communities. Regeneron is proud to be included on the Dow Jones Sustainability World Index and the Civic 50 list of the most "community-minded" companies in the United States. Throughout the year, Regeneron empowers and supports employees to give back through our volunteering, pro-bono and matching gift programs. Our most significant philanthropic commitments are in the area of science education, including the [Regeneron Science Talent Search](#) and [Regeneron International Science and Engineering Fair](#).

For additional information about the company, please visit [www.regeneron.com](http://www.regeneron.com) or follow @Regeneron on Twitter.

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